C L A I M S

1. A removable cooling module (1) having first and second ends, for use in a reactor (20) for carrying out an exothermic reaction, the cooling module comprising a coolant feed tube (2); a distribution chamber (4); a plurality of circulation tubes (5); and a collection chamber (6); said coolant feed tube (2) having at its first end an inlet (3), for charging the coolant module (1) with coolant, and communicating with said distribution chamber (4) at its second end; each of said circulation tubes (5) communicating with the distribution chamber (4) through a first end and communicating with said collection chamber (6) through a second end; the collection chamber (6) having an outlet (7) for discharging coolant; wherein the inlet (3) and the outlet (7) are both located towards the same end of the cooling module (1), wherein the inlet (3) is adapted to be removably connectable to a charge pipe (8) and the outlet (7) is adapted to be removably connectable to a discharge pipe (9).

2. A cooling module according to claim 1 wherein the second end of the coolant feed tube (2) represents a distribution chamber (4) with the circulation tubes (5) connected thereto, preferably a cooling module wherein the distribution chamber (4) comprises a conical section defining apertures through which the distribution chamber (4) communicates with each of the circulation tubes (5) and
wherein the collection chamber (6) comprises a conical section defining apertures through which the collection

chamber (6) communicates with each of the circulation tubes (5).

3. A cooling module according to either of claim 1 or 2 wherein the coolant feed tube (2) is located substantially centrally with respect to the circulation tubes (5).

4. A cooling module according to claim 3 wherein the coolant feed tube (2) protrudes through the collection chamber (6).

5. A cooling module according to any of the preceding claims comprising between about 20 and about 4,000 circulation tubes (5), preferably between about 100 and about 400 circulation tubes (5).

6. A cooling module according to any of the preceding claims wherein each of the cooling tubes (5) has a length of about 4 to about 40 metres, preferably a length of about 10 to about 25 metres.

7. A cooling module according to any of the preceding claims wherein the diameter of each circulation tube is from about 1 to about 10 cm, preferably of from about 2 to about 5 cm.

8. A cooling module according to any of the preceding claims having a square, triangular, rectangular, trapezoidal or hexagonal cross section, preferably a cooling module having a square cross sectional area of from about 0.20 to 2.00 m^2.

9. A reactor (20) for carrying out an exothermic reaction, said reactor (20) comprising a reactor shell (21); means for introducing reactants into the reactor shell (21); means for removing products from the reactor shell (21); and cooling means; wherein said cooling means comprises at least one removable cooling module (1) having first and second ends, for use in a

reactor (20) for carrying out an exothermic reaction, the cooling module comprising a coolant feed tube (2); a distribution chamber (4); a plurality of circulation tubes (5); and a collection chamber (6); said coolant feed tube (2) having at its first end an inlet (3), for charging the coolant module (1) with coolant, and communicating with said distribution chamber (4) at its second end; each of said circulation tubes (5) communicating with the distribution chamber (4) through a first end and communicating with said collection chamber (6) through a second end; the collection chamber (6) having an outlet (7) for discharging coolant; wherein the inlet (3) and the outlet (7) are both located towards the same end of the cooling module (1).

10. A reactor according to claim 9 wherein the inlet (3) is adapted to be removably connectable to a charge pipe (8) and the outlet (7) is adapted to be removably connectable to a discharge pipe (9).

11. A reactor according to claim 9 or 10, in which the cooling module has features according to any of claims 2 to 8.

12. A reactor according to any one of claims 9 to 11, in which the reactor comprises between 4 and 100 cooling modules, preferably between 12 and 65, more preferably between 24 and 50.

13. A reactor according to any of claim 9 to 12 wherein the reactor shell (21) comprises access means (22) for accessing the cooling means.

14. A reactor according to any of claims 9 and 13 further comprising support means (23) for supporting the cooling means.

15. A reactor according to any of claims 9 to 14 wherein the means for introducing reactants into the reactor shell (21) comprises a sparger.

16. A reactor according to any of claims 9 to 15 wherein the means for separating products from the reaction mixture (21) comprises a filter, preferably an internal filter located within the reactor shell (21).

17. A method for carrying out an exothermic reaction comprising the steps of: charging a reactor (20) with reactants; cooling the contents of the reactor (20) and removing products from the reactor (20), wherein cooling is carried out using cooling means comprising at least one cooling module (1) according to any of claims 1 to 8, suitably between 4 and 100 cooling modules, preferably between 12 and 65 cooling modules, more preferably between 24 and 50 cooling modules.

18. A process according to claim 17 for the synthesis of hydrocarbons wherein the reactor (20) is charged with syngas.

19. A product obtained according to the process of either of claims 17 and 18.